

**GAO**

United States General Accounting Office 132351

Report to the Chairman, Subcommittee on  
Department Operations, Research, and  
Foreign Agriculture, Committee on  
Agriculture, House of Representatives

February 1987

# DATA PROCESSING

## USDA Needs to Better Manage Field-Office Computer Purchases



132351

038205

---

1

---

2

3

4

5

6

7



Information Management and  
Technology Division  
B-220242

February 20, 1987

The Honorable George E. Brown, Jr.  
Chairman, Subcommittee on  
Department Operations, Research,  
and Foreign Agriculture  
Committee on Agriculture  
House of Representatives

Dear Mr. Chairman:

This letter further responds to the former Chairman's request regarding the acquisition and use of field-office computer systems by the Department of Agriculture's Soil Conservation Service (SCS) and Farmers Home Administration (FmHA).<sup>1</sup> The Department awarded a contract on September 10, 1985, to automate operations in the agencies' approximately 5,400 field offices. The contract covers microcomputers, minicomputers, general-purpose software, training, and maintenance services. These agencies estimate that the total cost to acquire the systems and to support and maintain them over the next 8 to 10 years will be about \$323 million.

As agreed with the former Chairman's office, we focused on answering the five questions listed below. To respond to the questions, we contacted representatives of SCS, FmHA, and the U.S. Department of Agriculture's (USDA) Office of Information Resources Management, and we reviewed SCS and FmHA automation-planning documents. We did our work in accordance with generally accepted government auditing standards. The objectives, scope, and methodology of our work are described in appendix II. The following briefly summarizes the results of our review; more details are provided in appendix I.

1. Are the Department of Agriculture, SCS, and FmHA pursuing the feasibility of sharing computer resources for collocated<sup>2</sup> field offices?

SCS and FmHA, with the assistance of the Department's Office of Information Resources Management, signed a joint plan on February 18, 1986, to conduct a sharing test. The test, which includes collocated offices and offices located in the same town or city, began in September 1986 and is

<sup>1</sup>We responded to the first phase of your request in a briefing report entitled Status of Farmers Home Administration Efforts to Install Office Automation (GAO/IMTEC-86-1BR, Oct. 4, 1985).

<sup>2</sup>This term indicates that these agencies' field offices are located in the same building.

---

scheduled to be completed in March 1987. However, both SCS and FmHA plan to continue independently acquiring computers for collocated offices. We believe that if the agencies can take full advantage of computer-sharing possibilities, they could save up to \$9.2 million in acquisition costs and \$2.1 million in maintenance costs over a 3-year period. This estimate includes sharing potential for both collocated offices and offices in the same town or city. These savings, however, would be somewhat reduced by the cost to upgrade or replace computers already installed at collocated field offices. The benefits of sharing could also be affected by other factors such as security and systems administration considerations.

A delay in installing computers until after the sharing test is completed would not have a significant adverse effect on either agency. Over half of FmHA's savings from field-office automation cannot be achieved until 1989, when its new loan-accounting system is completed. Also, if sharing is feasible, SCS may be able to automate its field offices sooner than planned because FmHA plans to complete installation of its computers about 3 years earlier than SCS.

2 Are SCS and FmHA pursuing the feasibility of using smaller, less expensive computers than originally planned for their field offices?

Both agencies are considering the use of smaller, less expensive computers for field offices not located in the same city. SCS plans to evaluate the use of smaller computers currently available under the September 1985 contract. We estimate that SCS could save \$13.7 million through acquiring these smaller computers. SCS recommended that the officials responsible for ordering computers for field offices defer ordering the larger computers until the smaller computers are evaluated. The officials, however, are still authorized to buy larger and more costly computers. FmHA determined that the smaller computers available under the contract could not meet its needs and planned to evaluate the feasibility of using another small computer currently not available under the contract. Because pricing and availability of this other computer was uncertain, we did not estimate the potential savings. FmHA has, however, already saved about \$700,000 by acquiring one computer instead of two that were planned for each of 38 field offices.

3 Is SCS employing a cost-effective approach to acquiring applications software for its field-office computers?

SCS is not following a cost-effective approach to acquiring applications software for its field-office computers. It is allowing, without adequate oversight, its 50 state offices and other organizational units to independently develop some software that could be resulting in a duplication of effort. Further, SCS has not maintained a complete inventory of its software applications in use, under development, or under consideration. Such an inventory would help avoid such duplication.

4. What has SCS done or planned to do to show whether field-office automation will improve service to farmers and other land users?

Although one SCS official told us that the agency intends to evaluate the impact of field-office automation in the spring of 1987, no formal plans have been prepared for doing so. In our view, this evaluation should begin soon so that a valid "before and after" test of the effects of automation can be made.

5. What is the status of FmHA's assessment of interfacing its field-office computers with states' automated lien systems?

FmHA has not determined whether its computer systems can interface with states' automated systems to determine whether the same equipment or crops are being used as collateral for more than one loan. We were told that this issue will be evaluated after all of FmHA's field-office systems are installed.

---

## Agency Comments and Our Evaluation

The Department substantially agreed with our findings. It did not agree with our recommendation that SCS and FmHA delay acquiring computer systems for offices located in the same building or city until the sharing study is completed. The Department believes that SCS and FmHA should continue procuring systems for these offices because automation offers benefits beyond those of merely sharing equipment.

We believe that the potential for acquisition and maintenance cost savings is large enough to justify waiting for the results of the sharing study (expected in March 1987) before acquiring more computers. See appendix IV for the Department's comments and our response.

---

## Conclusions

Before both agencies acquire additional computers, they need to evaluate the feasibility, cost-effectiveness, and savings that may be realized by sharing computers at collocated offices and offices in the same town.

---

or city. Our analysis shows that savings of about \$11.3 million could be realized from sharing computers in collocated offices and offices in the same town or city. Although the agencies are conducting a sharing test, both have been and plan to continue independently acquiring computers before the test is completed

Our analysis also shows that SCS could realize savings of about \$13.7 million by acquiring and using smaller computers. Although both agencies are making progress in evaluating the use of smaller, less expensive computers for non-collocated offices requiring a one-workstation system, officials responsible for ordering field-office computers are authorized to order the larger and more costly computers.

SCS has not provided the necessary oversight over its field-office automation effort. As a result, resources may be wasted by developing software that already exists or that is similar to software planned or being developed by other organizations within SCS.

SCS does not have formal plans to evaluate the benefits of field-office automation. As a result, this agency may not be able to verify the expected benefits or improvements that may be attributable to field-office automation.

---

## Recommendations

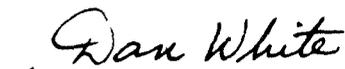
We recommend that the Secretary of the Department of Agriculture direct that.

- SCS and FmHA delay acquisition of additional computer systems for offices located in the same building, city, or town until the sharing study is completed.
- SCS defer ordering computer systems for its field offices requiring a one-workstation system until it determines whether these offices can use smaller, less expensive microcomputers available under the contract.
- SCS review software-development efforts of its field offices and maintain a current inventory of planned and existing software applications to help ensure that duplication of software development is avoided.
- SCS prepare and implement a plan to evaluate the benefits attributable to field-office automation.

---

We are sending copies of this report to the Secretary of Agriculture; the Administrators of SCS and FmHA; the Director of the Office of Management and Budget, and interested congressional committees and subcommittees. We will also make copies available to others upon request.

Sincerely yours,

  
for Warren G. Reed  
Director

---

# Contents

---

Letter		1
<hr/>		
Appendix I		8
USDA's Field-Office Computer Purchases	SCS' and FmHA's Automation Efforts	8
	Acquisition of Field-Office Computer Systems Has Not Been Coordinated to Achieve Potential Savings From Sharing Computers	9
	Both Agencies Are Pursuing the Feasibility of Using Smaller, Less Costly Computers	12
	SCS May Be Duplicating Existing Software Applications	12
	SCS Did Not Verify the Impact of Automation on Service to Farmers and Other Land Users	15
	FmHA Has Not Evaluated Whether Its Field-Office Systems Can Interface With States' Lien Systems	16
<hr/>		
Appendix II		17
Objectives, Scope, and Methodology		
<hr/>		
Appendix III		19
Methodology for Estimating Savings Through Sharing and Using Smaller Computers	Methodology for Estimating Savings Through Sharing	19
	Methodology for Estimating SCS' Savings From Using Microcomputers	22
<hr/>		
Appendix IV		23
Comments From the U.S. Department of Agriculture	GAO Comments	26
<hr/>		
Tables	Table III.1: Estimate of Potential Savings Through Sharing	19
	Table III.2: Estimated Savings Through Sharing	21

---

**Contents**

---

---

**Abbreviations**

FmHA	Farmers Home Administration
SCS	Soil Conservation Service
USDA	U.S. Department of Agriculture

---

# USDA's Field-Office Computer Purchases

---

## SCS' and FmHA's Automation Efforts

SCS and FmHA plan to spend about \$323 million to automate their approximately 5,400 field offices. The Department awarded a contract to Electronic Data Systems Corporation on September 10, 1985, for field-office computers (computers and attached terminals or workstations). Under the contract, AT&T Corporation, a subcontractor, is expected to supply both SCS and FmHA with more than 5,000 minicomputers and 10,000 microcomputers. In addition, the contract covers general-purpose software, training, and administrative support services.

---

## SCS' Project

As of May 1986, SCS had ordered about 400 computer systems at an estimated cost of about \$12 million to be used at approximately 350 of its about 3,150 field offices. It plans to complete the acquisition by fiscal year 1990. These computers are for automating activities such as preparing conservation plans, designing conservation practices, and managing field-office operations. SCS estimated that the cost to acquire systems for its offices will be about \$68 million. The agency expects to incur additional costs of about \$135 million discounted<sup>3</sup> over 10 years for such items as software development, equipment maintenance, and telecommunications. SCS estimated that automating field-office activities would free about 4.2 million hours (valued at about \$48 million) of field-office staff time annually to plan conservation practices for about 15 million additional acres of land over a 5-year period.

---

## FmHA's Project

As of May 1986, FmHA had acquired about 1,200 computer systems at an estimated cost of about \$35 million for approximately 1,200 of its approximately 2,250 field offices. It plans to acquire the remaining computers by November 1987. These computer systems are for automating activities such as preparing financial schedules for loan applicants, monitoring loan delinquencies, and maintaining basic borrower files. On the basis of FmHA data, we estimate that its computer-acquisition costs for its offices will be about \$58 million. The agency estimated additional costs of \$62 million discounted over 13 years for such items as software development, equipment maintenance, and telecommunications. FmHA estimated that by automating its field offices it would free about 3 million staff hours annually (valued at about \$48 million) and provide quantifiable savings of about \$257 million discounted over a 10-year period. Most of the quantifiable savings were expected to result from

---

<sup>3</sup>The need for discounting arises because benefits and costs associated with computer-acquisition projects usually are not experienced in the same time period. A dollar spent next year is assumed to be worth less today than a dollar spent today. The further into the future a benefit or cost occurs, the smaller its equivalent present value.

reducing (1) loan losses and delinquencies by more timely collections and (2) balances in its bank accounts used for disbursing loan funds by estimating its funds needs more accurately.

FmHA estimated that about \$141 million (about 55 percent) of the quantifiable savings will not be achieved until its new centralized loan-accounting system is implemented and the field-office computers are able to directly access the system. Although this accounting system was originally scheduled for implementation in 1987, development has been delayed (possibly until 1989) because the development contract was canceled when the contractor did not meet prescribed milestones.

## Acquisition of Field-Office Computer Systems Has Not Been Coordinated to Achieve Potential Savings From Sharing Computers

Consistent with federal regulations<sup>4</sup> promoting the sharing of computer resources, SCS' Chief and FmHA's Administrator signed a joint plan (dated February 18, 1986) that established milestones and procedures to test and evaluate sharing computers at collocated field offices. There are 1,277 of these locations. The study would include an evaluation of (1) combining the agencies' work load on one system and (2) issues, such as security and operating-system stability, that may hinder or reduce the benefits of sharing. We were told by officials of both agencies that the sharing study was later expanded to include their offices located in the same city or town. There are 462 of these locations. According to the plan, the evaluation was to be completed in October 1986. However, because both agencies are incurring delays in developing software applications needed to perform the test, officials stated the evaluation probably will not be completed until March 1987.

Both agencies are independently purchasing computers for their respective offices. SCS purchased computers for 58 collocated field offices and FmHA purchased computers for 614 collocated field offices. At 33 of these locations, both agencies had purchased computers for their collocated offices. SCS made these purchases prior to initiating the sharing study. FmHA purchased the majority of its computers before initiating the sharing study.

SCS and FmHA officials told us that they do not plan to defer ordering computers for their field offices even though the sharing study is not

<sup>4</sup>Office of Management and Budget Circular A-130, Management of Federal Information Resources (Washington, D C , Dec 12, 1985), which superseded Circular A-71 Responsibilities for the Administration and Management of Automatic Data Processing Activities (Washington, D C , Mar 6, 1965) and U S Department of Agriculture Regulation 3100-2, Agency Information Resources Management Review Board (Washington, D C , Dec 13, 1983)

finished. They told us that if sharing proves to be feasible and cost-effective, computers already purchased for collocated offices could either be upgraded to support both agencies or moved to other locations and a larger system installed. We found, however, that maintenance costs for a computer that is later upgraded to meet both agencies' needs would be more than the maintenance cost for an initially installed computer with sufficient capacity to meet those needs. Also, if a system must be moved and a larger one installed, the agencies would be required to pay additional installation and removal costs. We were unable to estimate the overall cost of upgrading the systems because that depends on which agency's system will be upgraded and the additional equipment needed to upgrade the system to meet both agencies' work load requirements. Further, if both agencies continue to independently buy computer systems for their own field offices, they may procure more computers than necessary and thereby limit the number of offices to which they could move computers.

In our opinion, a short delay in installing computers in collocated offices until the sharing test is completed would not have a significant adverse effect on either agency and could result in savings. In the case of FmHA, over half of the estimated savings attributable to field-office automation cannot be achieved until completion of the agency's new loan-accounting system, which one FmHA official estimated may not be completed until 1989. Further, FmHA will not lose the benefits from office automation in its field offices where computers have already been installed and would incur a short delay in realizing these benefits at field offices where computers have not been installed. In addition, if the sharing test shows that SCS can effectively share FmHA computers, SCS may be able to automate its collocated field offices sooner than currently planned because all of FmHA's computers are scheduled to be installed by November 1987, about 3 years earlier than SCS is scheduled to install all of its computers.

USDA's Office of Information Resources Management (the Office) is responsible for identifying and developing strategies, such as sharing, that will foster the effective and efficient use of information technology departmentwide. The Office participated with the two agencies in reaching an agreement on sharing. An Office official told us that, since then, the Office has been concentrating its resources on monitoring the timely delivery of field-office computer systems because the contractor was having trouble meeting delivery schedules. The official also told us that the Office plans to monitor the sharing test to ensure that (1) the test was progressing on schedule and (2) both agencies were not ordering equipment for their collocated offices before the completion of

the sharing study. These plans, however, had not been finalized and implementation had not begun as of July 1986.

We could not determine the precise savings that could be realized through sharing computer resources because the agencies have not determined the exact number of collocated field offices that can share computer systems or the specific size of equipment needed to support their combined work loads. However, our analysis of the agencies' computer-resource requirements for 1,277 collocated field offices showed the agencies may be able to achieve savings at 1,184 of these locations. We excluded the other 93 locations because the two agencies' combined requirements at these locations exceeded the vendor's demonstrated capacity of a single computer system.

We estimate that the savings may be as much as \$8.3 million, consisting of about \$6.7 million in acquisition costs and about \$1.6 million in equipment maintenance costs over 3 years. These savings, however, may be reduced by the costs to replace or upgrade computers at locations where one or both agencies have already installed computers. Other factors that may hinder or reduce the net benefits of sharing would include security, operating software stability, ease of use, and systems administration. We based our estimate on comparing (1) the costs of the two agencies' acquiring and sharing a single system for each collocated office to (2) the costs of each agency's acquiring separate systems for each collocated office. (Appendix III describes our methodology for these estimates.)

In addition to the savings possible by sharing computer systems at collocated field offices, the two agencies may also achieve savings of about \$3 million by sharing computers in 418 of the 462 locations at which they have offices in separate buildings in the same town or city. We excluded the other 44 locations for the same reason discussed above (see appendix III). The savings include about \$2.5 million in acquisition costs and about \$0.5 million in maintenance costs over 3 years. Data were not available during our review to estimate the cost of local telephone lines that would reduce these savings to some extent. One SCS division director also told us that because local telephone lines would have to be used to share a computer system in separate buildings, the agency using the telephone lines may experience slower data processing rates. He stated that sharing may not be practical at some of the locations. The practicality of using local telephone lines is expected to be evaluated as part of the sharing study.

---

## Both Agencies Are Pursuing the Feasibility of Using Smaller, Less Costly Computers

SCS and FmHA are pursuing the feasibility of using smaller, less expensive computers for their field offices. In addition to the savings attributable to sharing, we estimate that SCS could save up to \$13.7 million in acquisition costs by acquiring smaller, less expensive computers at field offices where it appears SCS cannot share with FmHA. The smaller computers would provide fewer capabilities than the larger systems available under the contract. The smaller computers, however, may still meet the needs of SCS' users. An SCS official stated the agency plans to evaluate the use of microcomputers available under the contract for its field offices requiring one workstation not located in the same town as FmHA. The official told us SCS recommended that its state conservationists defer ordering the larger and more costly computer planned for these field offices until completion of its evaluation of the smaller, less expensive microcomputer. However, the official told us that state conservationists have the authority to buy computers for their field offices before the study is completed if they do not believe the purchases should be delayed.

An FmHA official stated that the smaller, less expensive computers available under the contract do not meet the work load requirements of its field offices. He also said that FmHA planned to evaluate another small computer (currently not available under the contract) that may meet the capability needs of its field offices. Because of uncertainties about price and availability of the small computers, we did not estimate the savings that FmHA might realize by acquiring them.

In addition, we estimate that FmHA has saved about \$700,000 by buying one computer system rather than two for each of 38 offices. If the agency had relied on the vendor's demonstrated capabilities of the computer systems, it would have been justified in buying two computer systems for each of the 38 offices. Instead, an FmHA official told us that because all field-office staff would not be expected to use the system concurrently, one system should be able to handle their requirements.

---

## SCS May Be Duplicating Existing Software Applications

SCS is following a two-tiered approach to developing software for its field-office computer systems. First, the agency is centrally developing several software applications that will then be provided to all its field offices. Such applications include software to design ponds and to develop conservation plans for farmers and other land users. Secondly, SCS is allowing its 50 state offices and other organizational units to independently identify and develop other needed software (for example, for land-leveling computations and project progress reporting).

SCS established a National Information Resources Management committee in August 1984. One of its responsibilities was to minimize redundant and overlapping software development efforts by its organizational units. Other responsibilities include providing guidance in software development by setting priorities, assigning projects, and overseeing the reporting of work on new software, and exploring ways to maximize the compatibility of software nationwide to avoid duplication of effort. Our review indicates that this committee is not effectively carrying out these responsibilities.

The majority of SCS' state offices prepared a plan describing how they plan to implement the new computer systems in their respective field offices. Any expected software development was to be included in this plan. Our review showed that 28 of the 50 state offices indicated that they had such plans. Eleven of the 28 identified the specific software to be developed. Our analysis of the plans for these 11 offices showed that seven planned to develop 16 software programs or applications that appeared to be already available in the software inventory agencywide. For example, three offices planned to develop a vehicle-inventory management system and three planned a travel-budget system, both of which are already available. We could not estimate the cost of these apparently redundant efforts because the states' plans did not estimate the cost of developing the software. Further, because the other 17 offices did not identify the specific software applications they plan to develop, we could not determine if they also plan to develop duplicate software applications.

The chairman of the committee told us that the committee did not review the state offices' plans because it did not have time during its meetings to do so. The chairman said he assumed that SCS' Information Resources Management Division would review the plans because they were submitted to that office. The director of the Information Resources Management Division told us that his division did not review the plans because he did not have sufficient personnel.

SCS' Deputy Associate Chief for Administration and other headquarters officials stated that there has been a long-standing problem of using resources on apparently redundant and overlapping software-development efforts. These officials said it does appear that state offices are planning to develop software to support the same functions. The officials also stated that the problem is likely to worsen as the agency substantially increases the number of computers in its field offices. Finally,

the officials said it would be more cost-effective if all the states supported and used one version of SCS' major applications rather than developing several versions.

The committee chairman told us he would recommend that the committee establish procedures to review and coordinate state offices' software-development efforts to prevent duplication of effort.

---

### SCS' Software Inventory Is Incomplete

Although SCS' National Instruction 270-301 requires its organizations to report all software they develop or plan to develop to its agencywide software inventory, our review shows that several organizations have not done so. This could result in development of duplicative software

According to the inventory, 22 of SCS' 50 state offices and two of its four national technical centers have collectively developed or were developing about 300 software applications as of April 1986. But in January and February 1986 we communicated with each of these organizations and found that 28 state offices and three national technical centers had collectively developed or were developing about 700 software applications.

We contacted four state offices and one national technical center that had collectively developed or were developing about 280 of the 400 unreported software applications to determine their reasons for not reporting their software.

Officials at two state offices said that they had not reported their applications because they were not documented well enough for use by another office. Another state-office official told us he did not know specifically why his office's software was not reported, but estimated that the reasons were the software applications were small and not often used.

In our opinion, these two reasons for not reporting software to the inventory are not valid. National Instruction 270-301 requires that SCS organizational units report software for inclusion in the inventory when they are ready to begin development rather than after the software has been fully documented. Also, the instruction does not limit reporting to only large software applications, but to all software.

Officials at the other two offices said they had reported their applications to the inventory. SCS headquarters officials told us these applications may not have been added to the inventory because of lack of staff to enter the software into the inventory.

## SCS Did Not Verify the Impact of Automation on Service to Farmers and Other Land Users

SCS expects automation to increase field-office productivity and to improve the level of service to farmers and other land users. The agency estimated that automating field-office activities, such as preparing conservation plans, designing conservation practices, and managing operations, would make available about 4.2 million hours of staff time annually. This time would be used by field-office personnel to plan conservation practices for about 15 million acres of additional land over a 5-year period. Our review showed that SCS has not developed a plan for monitoring and verifying these expected automation benefits, as prescribed by Office of Management and Budget Circular A-130.<sup>5</sup>

In its Management of the U.S. Government, Fiscal Year 1986 report, the Office of Management and Budget stated that federal investments in automation must be treated in a businesslike manner and the gains from automation projects should be monitored and verified. Further, Circular A-130 requires agencies to establish management-control systems that minimize costs and maximize benefits of major information systems.

SCS' Information Resources Management Division director told us the agency intends to evaluate the impact of field-office automation in spring 1987. But, at the completion of our audit work in July 1986, SCS had not developed a plan, prepared a schedule, or described the methodology for systematically collecting and analyzing the pre-automation and post-automation data needed to verify the improvements in productivity and service that may be attributable to computers. Generally accepted procedures for conducting such an evaluation require that, for results to be valid, operations must be studied before automation takes effect as well as after. The director agreed that an evaluation plan, schedule, and methodology should be prepared before installing the applications software.

If SCS does not perform these tasks before purchasing a substantial number of computers, it will continue to spend millions of dollars to automate its field offices with no assurance that the government and the

<sup>5</sup>We made similar observations regarding FmHA's automation project in our report, Status of Farmers Home Administration Efforts to Install Office Automation (GAO/IMTEC-86-1BR, Oct. 4, 1985).

public are receiving an adequate return on investment. Further, the agency may not obtain the information necessary to determine whether changes in the project are needed before completion to achieve the expected benefits.

---

### **FmHA Has Not Evaluated Whether Its Field-Office Systems Can Interface With States' Lien Systems**

FmHA officials told us that the agency has not evaluated whether the computer systems it is installing in its field offices can interface with states' centralized automated systems that contain lien data on farm assets. This capability would enable FmHA field-office employees to directly access states' automated lien systems to determine whether a farmer applying for a loan is using the same assets (that is, farm equipment or crops) as collateral to obtain more than one loan.

FmHA's Acting Deputy Administrator for Program Operations told us that because the automation project has a high priority and the agency has limited staff resources, it would be difficult to continue the automation tasks and concurrently evaluate whether the field-office computer systems could interface with states' automated systems. This official stated that FmHA would evaluate this issue after installing (now estimated for November 1987) all its field-office systems and verifying their effective operation.

# Objectives, Scope, and Methodology

Our objectives were to answer the following questions:

- Are the Department of Agriculture, SCS, and FmHA pursuing the feasibility of sharing computer resources in collocated field offices?
- Are SCS and FmHA pursuing the feasibility of using smaller, less expensive computers than originally planned for their field offices?
- Is SCS employing a cost-effective approach to acquiring applications software for its field-office computers?
- What has SCS done or planned to do to show whether field-office automation will improve service to farmers and other land users?
- What is the status of FmHA's assessment of interfacing its field-office computers with states' automated lien systems?

The scope of our review was limited to responding to the questions regarding SCS' and FmHA's field-office automation projects.

To determine if both agencies are considering sharing automation at collocated offices, we contacted USDA's Office of Information Resources Management, SCS, and FmHA representatives. We also interviewed SCS and FmHA officials to determine if they are evaluating the feasibility of using smaller, less expensive computers than those originally planned

To estimate the savings that might occur if the SCS and FmHA share equipment in collocated offices and offices in different buildings in the same town, we analyzed data on field-office location, contract equipment, and maintenance costs in the Department and each agency. In addition, we estimated the savings that would result from SCS use of smaller, less expensive computers. The methodology we used for making these estimates is explained in appendix III.

To determine whether SCS' approach to developing applications software was cost-effective, we evaluated its software-development plans and inventory of applications software.

To obtain the status of SCS plans to evaluate whether field-office automation will improve service, we discussed with officials their agency's plans to measure the effects of field-office automation. We also reviewed SCS' economic analysis and other available project documentation.

To determine the status of FmHA's assessment of interfacing its field-office computers with states' automated lien systems, we contacted senior management officials.

We performed our work from December 1985 through July 1986 at the following locations:

- FmHA's national headquarters in Washington, D.C.;
- SCS'
  - national headquarters in Washington, D.C.;
  - state offices in Des Moines, Iowa; Lincoln, Nebraska, and Columbia, Missouri;
  - technical center in Lincoln, Nebraska;
  - five area and field offices in Iowa, Nebraska, and Missouri

In addition, we telephoned and obtained information from SCS' other 47 state offices and three other national technical centers

We obtained official comments from USDA on a draft of this report (see appendix IV) and have incorporated them where appropriate

We did our work in accordance with generally accepted government auditing standards

# Methodology for Estimating Savings Through Sharing and Using Smaller Computers

We estimate that SCS and FmHA could save about \$11.3 million by sharing computers and SCS could save about \$13.7 million through acquiring smaller computers. Our methodology for these estimates follows.

## Methodology for Estimating Savings Through Sharing

Based on data provided by USDA, SCS, and FmHA, we estimated the savings that both agencies could realize if they shared computer systems at 1,602 locations where their field offices are collocated or located in the same town or city, but not in the same building. These savings, however, would be somewhat reduced by the cost to upgrade or replace computers already installed at collocated field offices. Table III.1 shows our estimates of the savings that might be achieved if the two agencies share a computer at these locations

**Table III.1: Estimate of Potential Savings Through Sharing**

Dollars (in millions)				
Office Type	Number of locations	Estimated Savings		
		Acquisition	Maintenance	Total
Collocated	1,184	\$6.7	\$1.6	\$8.3
Located in same town but not same building	418	2.5	0.5	3.0
<b>Total</b>	<b>1,602</b>	<b>\$9.2</b>	<b>\$2.1</b>	<b>\$11.3</b>

To determine the number of locations at which the agencies might share a computer system, we obtained a listing from USDA that identified all cities where SCS and FmHA had field offices collocated or located in the same town or city. We also obtained from the agencies the equipment configurations and the associated cost of equipment they bought or planned to buy for each field office.

According to data the agencies provided us, there were 1,277 towns or cities where they both had collocated field offices. We reduced this to 1,184 locations that might share a single computer because the data provided indicated that at 93 locations the total number of workstations required by the two agencies exceeded the contractor's demonstrated capacity for a single computer. We accepted the contractor's demonstrated capacity without independent verification. The actual equipment capability, however, may be greater; this would allow some of the 93 locations we excluded to share computers, which would increase the estimated potential for savings through sharing equipment. FmHA has already demonstrated that the actual capacity of one system exceeded the contractor's demonstrated capacity of this system for some of its field offices and ordered smaller computers than originally planned. We

also used this rationale to estimate that 418 of the 462 locations at which both agencies had offices located in the same town or city but not in the same building might be able to share a single computer.

---

**Acquisition Costs**

In estimating the acquisition costs for shared computer systems, we assumed that

- 446 locations, where the agencies' total and combined requirement was two workstations, could share a single AT&T 3B2/300 computer system because FmHA's test of the 3B2/300 showed this system could support two workstations; and
- 1,156 locations, where the two agencies' combined requirement was three to five workstations, could share a single AT&T 3B2/400 computer system because the contractor demonstrated that this system could support up to five workstations

At all of these locations, we assumed that the two agencies would share the same communications equipment and word processing, calendar/scheduling systems, and utility software. Our assumption was based on the fact that each agency plans to share these resources with two or more offices within their own agency at some locations. We assumed that the two agencies would not share a printer, hard-disk drive, or data base management system because their work loads may necessitate the need for these items. However, if the agencies' sharing test shows that they can share these resources, savings would be increased by about \$9 million.

---

**Acquisition and  
Maintenance Savings**

To estimate savings in acquisition and maintenance costs that the two agencies could realize by sharing a computer, we compared the contract cost for two systems to the contract cost for a single, shared system for the 1,602 field offices where it appeared the two agencies could share. Table III 2 resulted from this comparison.

---

**Appendix III  
Methodology for Estimating Savings Through  
Sharing and Using Smaller Computers**

**Table III.2: Estimated Savings Through Sharing**

Dollars (in millions)				
SCS	Workstations Needed		Discounted Estimated Savings	
	FmHA	Field Offices	Acquisition	Maintenance
1	1	446	\$4.3	\$0.5
1	2	570	1.1	0.9
2	1	57	*	*
1	3	252	2.0	0.3
2	2	81	0.2	0.1
3	1	24	0.1	*
1	4	88	0.8	0.1
2	3	53	0.5	*
3	2	25	*	*
4	1	6	*	*
<b>Total</b>		<b>1,602</b>	<b>\$9.2<sup>a</sup></b>	<b>\$2.1<sup>a</sup></b>

\* Less than \$50,000

<sup>a</sup>Does not add due to rounding

Acquisition costs saved through sharing could be sizable. For example, at each of the 446 locations where each agency plans to buy an AT&T 3B2/300 computer with one workstation, federal savings could total about \$4.3 million if the two agencies bought and shared a single AT&T 3B2/300 computer with two workstations. And, at the 570 locations where FmHA plans to install an AT&T 3B2/300 computer with two workstations and SCS plans to install the same computer with one workstation, the government could save about \$1,925 at each location for a total of about \$1.1 million by buying just one AT&T 3B2/400 computer with three workstations.

To estimate potential savings in maintenance costs that the two agencies might realize through sharing, we compared the contract cost for maintaining two systems to the contract cost for maintaining one system at the 1,602 field offices. For example, at each of the 446 locations where each agency plans to buy an AT&T 3B2/300 computer system with one workstation, the government could realize maintenance savings of about \$1,135 over a 3-year period, for a total of about \$500,000. We similarly estimated the savings for the remaining 1,156 locations. We estimated these (discounted) savings for only 3 years because the contract requires the agencies to obtain equipment maintenance at a specified rate for 3 years after purchase. Although additional maintenance savings may accrue after the third year, we did not estimate the amount of the savings because the rates may change.

---

## Methodology for Estimating SCS' Savings From Using Microcomputers

To estimate savings from using computers smaller than initially planned, we analyzed SCS' data on the field offices for which SCS plans to order systems with one workstation for offices not collocated with FmHA. We also obtained the contract prices for the AT&T computer systems, software, and peripheral equipment now available under USDA's equipment contract.

Based on SCS' data we estimated that about \$13.7 million in acquisition costs could be saved if the smaller AT&T 6300 microcomputer were used in lieu of the AT&T 3B2/300. The data show that the agency has 1,069 field offices (none of which is located in the same building or city as FmHA offices) that require a single workstation. For these offices, SCS currently plans to buy AT&T 3B2/300 computers with one workstation. We based our estimated savings on the \$12,846 difference between the \$5,865 cost of an AT&T 6300 microcomputer and the \$18,711 cost of an AT&T 3B2/300 computer with one workstation.

# Comments From the U.S. Department of Agriculture

Note GAO comments supplementing those in the report text appear at the end of this appendix



DEPARTMENT OF AGRICULTURE  
OFFICE OF ASSISTANT SECRETARY FOR ADMINISTRATION  
WASHINGTON D C 20250

NOV 13 1986

Mr. J. Dexter Peach  
Director, Resources, Community and  
Economic Development Division  
U.S. General Accounting Office  
Washington, D.C. 20548

Dear Mr. Peach

We thank the General Accounting Office (GAO) for the chance to comment on the draft of a proposed report entitled "Agriculture Needs to Better Manage Computer Purchases in Field-Offices." We offer the following comments.

General Comments.

The draft appears fair and reasonable. We agree substantially with its findings, although we believe the title is inappropriate. We do acknowledge a need to improve, on a continuing basis, our management of computer purchases; but some uncertainty always goes with estimating savings in this or any other document. For example, in Appendix II, the first paragraph on page 3 assumes that the 3B2/300 can support two workstations in a shared environment. Not until both the Soil Conservation Service (SCS) and the Farmers Home Administration (FmHA) have fully developed their custom software, could the 3B2/300 demonstrate its support of two workstations. Conversely, in such an environment, the 3B2/400 might prove fit to handle six or even more workstations.

Particularly on pages 3 and 13, we note in the draft an emphasis on (immediate) cost savings possible from smaller computers, but no mention of the corresponding reduction of ultimate benefits and loss of functionality that complicate this choice.

Within the Department projected savings from sharing equipment has sometimes varied to a value as low as \$6 million. For us, the draft's estimate of \$11.3 million, saved over 3 years in acquisition and operations costs, represents a theoretical maximum. The net benefits of sharing obviously depend also on the effort needed at each site to combine the agencies' workloads on one system.

The narrative does not mention systems management, although security, operating software stability, ease of use, systems administration, and other factors might impede sharing or reduce its net benefits.

Now on page 20

See comment 1

Now on pages 2 and 12

See comment 2

See comment 3

See comment 4

Appendix IV  
Comments From the U.S. Department  
of Agriculture

J. Dexter Peach

2

We do not believe that the report should consider, as candidates for sharing, offices located in the same town, but not in the same building. Such sharing becomes impractical because the equipment contract provides for communication speeds too slow for production office work. For offices in the same building, we think that the report should assume sharing is possible only in 80 or 85% of cases, particularly because some sites already share intra-agency equipment, and the State Offices never could share.

See comment 5  
Now on page 8

We suggest that in some places, such as on page 5, the draft might better describe the equipment in terms of systems and attached workstations, rather than as minicomputers and microcomputers.

See comment 6

Now on page 9

On page 7 the draft overlooks the evolutionary improvements brought by FmHA's new accounting system and the dependence of those improvements on the equipment. Without installed multifunction workstations, the agency cannot achieve key benefits either in the processing of local transactions or in the handling of inquiries into the status of local borrower accounts. To retrofit the accounting system to implement the goals of the Automated Program Delivery Systems will take at least until 1989, but the report should recognize that some capabilities already are well phased-in.

See comment 7

Specific Comments on the Five Questions Treated in the Draft

First, the feasibility of sharing computer resources in colocated offices continues under test. To support this, the Office of Information Resources Management (OIRM) may have to play a larger role, especially to ensure that the two agencies share equipment under specific directions from their national offices.

Second, both agencies are pursuing use of PC-6300's where appropriate, and for the near future, for small offices, SCS will buy PC-6300's, not 3B2's.

On the third question we agree that SCS needs to apply more staff resources, and increase its effort to ensure cost effectiveness, particularly by reducing duplicate developments of software. However, we also think that individual local initiatives should be encouraged under appropriate management.

Fourth, we agree that SCS must prepare and implement a specific plan to demonstrate the improved service farmers will get from field office automation.

The report correctly states the position on the fifth issue: namely, that FmHA must first install more field office systems before determining whether these can interface with the State systems, and so check if the same crop, for example, serves as collateral for more than one loan.

See comment 8

Appendix IV  
Comments From the U.S. Department  
of Agriculture

J. Dexter Peach

3

We disagree with one recommendation:

Contrary to the draft, we believe that the Soil Conservation Service and Farmers Home should continue procurement of computer systems even for those of their offices that share the same city, town or building. Both agencies began to automate in anticipation of benefits far beyond those of merely sharing the equipment. To delay new procurement of equipment, until the agencies complete their study of sharing it, would sacrifice the greater benefits for the lesser.

See comment 9

Except as noted below, we agree with the other recommendations:

The Soil Conservation Service should defer ordering computer systems for one-workstation field offices until the agency has determined the possibility of obtaining, under the contract, less expensive microcomputers than those now contemplated. For the interim this rules out purchase of 3B2's; although we suggest allowing, in some cases, exemptions from the general deferral. In fact, SCS has already greatly curtailed orders for equipment. We suggest also that SCS continue to buy PC-6300's for small offices at least until the agency can resolve the debate about MS-DOS and UNIX. This would give as many field offices as possible the minimum automation to handle the new workload imposed on SCS by the 1985 Farm Bill.

See comment 10

To avoid duplicate developments of software, SCS should review the development efforts in its field offices and maintain an inventory of planned and existing software applications.

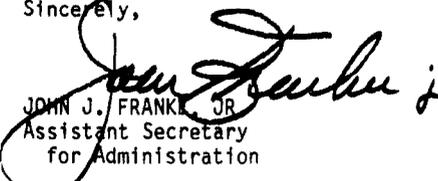
The SCS should plan and implement an evaluation of the benefits attributable to field office automation.

See comment 11

For your convenience, we enclose with this letter the individual responses of OIRM and the two agencies.

Again, we appreciate the opportunity to respond to your draft report. We look forward to working with you throughout this review. If you have any questions, please refer them to Art Devlin on 447-6275.

Sincerely,

  
JOHN J. FRANKL, JR.  
Assistant Secretary  
for Administration

Enclosure

cc: Glenn P. Haney, OIRM  
Vance L. Clark, FmHA  
Wilson Scaling, SCS  
Stephen B. Dewhurst, OBPA

The following are GAO's comments on the Department of Agriculture's letter dated November 13, 1986.

---

## GAO Comments

1. The Department agreed substantially with the report's findings. It stated, however, that GAO's estimates of savings contain some uncertainties and are based in part on the assumption that the two agencies can share an AT&T 3B2/300 at locations requiring two workstations. USDA stated that it cannot determine whether an AT&T 3B2/300 will support the two agencies' combined work load until both agencies fully develop their custom software.

We agree that our estimate of savings contains some uncertainties and stated this on page 19. We agree that until SCS and FmHA develop their custom software it is not possible to completely demonstrate that the 3B2/300 can support both agencies' needs. Our estimate demonstrates that substantial savings are possible if the sharing test shows that it is practical for both agencies to share equipment at their collocated offices. We believe this may be practical because FmHA has already demonstrated that the AT&T 3B2/300 minicomputer can support two workstations and reduce acquisition costs. Further, both agencies plan to share equipment among two or more offices within their own agencies at some locations.

We agree that the AT&T 3B2/400 system may prove fit to handle six or even more workstations (rather than a maximum of five workstations as demonstrated by the contractor). If the system can handle more than five workstations, our estimate of the amounts of savings possible through sharing would be higher. Although the sharing test now being done should determine more definitively whether sharing is practical, we believe our assumptions are reasonable.

2. The Department stated that GAO emphasized savings that could be realized through SCS' use of smaller computers but did not mention the corresponding reduction of ultimate benefits and the loss of functionality that complicate this choice.

SCS' estimate of ultimate expected benefits, shown in its economic analysis, was based on using a computer with the same capabilities as the smallest computer (the AT&T 6300 microcomputer) available under the contract. We recognize, however, that the smaller computer would provide fewer capabilities than larger systems available under the contract (such as the AT&T 3B2/300 or 3B2/400 system). However, as discussed

in the report on page 12, SCS is planning to evaluate whether the smaller computer can satisfy its work load requirements for the offices requiring one workstation. Further, SCS headquarters recommended deferring orders for the larger computers until the evaluation has been completed. We endorse this recommendation; if the evaluation results are positive, we believe SCS can save as much as \$13.7 million in acquisition costs.

3. The Department stated that its projected savings from sharing equipment has varied to a value as low as \$6 million. USDA believes that GAO's estimate of \$11.3 million represents a theoretical maximum.

We believe our \$11.3 million estimate is reasonable. As discussed on page 19, we reduced the number of locations that might share a single computer to the 1,184 at which the combined requirements of both agencies were within the contractor's demonstrated capacity. Also, as discussed on page 20, our estimate was based on the assumption that the two agencies would not share such resources as printers, hard-disk drives, or data base management systems. However, if the sharing test shows that the two agencies can share these resources, savings through sharing would be increased by about \$9 million.

We did, however, attempt to qualify our estimate in the draft report (now on page 10) by recognizing that the savings might be reduced by the costs to replace or upgrade computers at locations where one or both agencies have already installed computers. The actual amount that may be saved will depend on these costs and the results of the sharing study that includes an evaluation of combining the agencies' work loads on one system.

4. The Department stated that GAO did not mention that system management issues (such as security, operating software stability, ease of use, and system administration) might impede sharing or reduce its net benefits.

We recognized that those and other management and technical issues may impede sharing and could potentially reduce the benefits of sharing at some locations. That is why we stated in various sections of the report that a more precise estimate of savings is not possible until SCS and FmHA conduct further testing of the various system alternatives. Evaluating the total costs and benefits associated with the agencies' sharing computer resources at offices in the same building, city, or town was beyond the scope of our review. The practicality of sharing these

resources is the objective of the agencies' sharing study, which should determine the most cost-effective alternative. Based on the Department's comment that certain issues may hinder or reduce the benefits of sharing, we have included additional information on page 9.

5. The Department stated that GAO should not consider as candidates for sharing agency offices located in the same town, but not in the same building. USDA stated that such sharing becomes impractical because the equipment contract provides for communication speeds too slow for production office work. The Department also believes that, for offices in the same building, GAO should assume sharing is feasible only in 80 or 85 percent of the locations: some sites already share intra-agency equipment and the agencies' state offices never could share.

We did not evaluate all alternatives for sharing systems or the total cost and benefits associated with the agencies' sharing computer resources. We included offices located in the same town but not in the same building as candidates for sharing because we were told that these offices were being evaluated as part of the sharing study. We expect the practicality of these offices' sharing equipment will be evaluated as part of the sharing study. The possibility of communications problems is recognized on page 11. Further, the agencies' sharing study should determine how communications speeds will impact production of office work.

We recognized that state offices could not share systems and we excluded both agencies' state offices in our estimate of savings through sharing. We do not believe, however, that because some sites already share intra-agency equipment they would be precluded from inter-agency sharing. We would expect this issue also to be addressed by the sharing study because the capability of the computer systems may adequately meet intra-agency as well as inter-agency needs.

6. The Department stated that in some places, such as on page 8, the report might better describe the equipment as systems and attached workstations, rather than as minicomputers and microcomputers.

The equipment is correctly described in either way. For clarification, however, we added the parenthetical comment (on page 8) further specifying the equipment as "computers and attached terminals or workstations."

7. The Department stated that GAO overlooked the evolutionary improvements brought by FmHA's new accounting system and the dependence of those improvements on the new field-office computer systems. USDA further stated that without installed field-office computer systems, FmHA cannot achieve key benefits either in processing of local transactions or in the handling of inquiries into the status of local borrower accounts. The Department stated that the new accounting system would not be fully operational until 1989, but stated that GAO should recognize that some capabilities already are well phased in.

We agree that multifunction workstations are needed for FmHA to achieve the benefits of the new accounting system. Since implementation of the Automated Program Delivery System for accounting functions will take at least until 1989, a 4- or 5-month delay in purchasing computer systems for offices located in the same building or city should have little impact on the accounting system's implementation and resulting benefits. The sharing test is expected to be completed by March 1987 and its results should better identify the needed systems. Furthermore, FmHA has ordered or received more than half of its new computer systems that have the capability to operate the new accounting system.

8. The Department commented specifically on each of the five questions we answered in our report, agreeing that we accurately presented its position in our responses. Concerning the third question, USDA noted that it believes that individual, local software development should be encouraged under appropriate management. The Department concurred with our recommendations that SCS review its software development efforts to reduce duplicative development and prepare and implement a plan to evaluate the benefits attributable to field-office automation.

9. The Department disagreed with GAO's recommendation that SCS and FmHA should delay procurement of computers until the sharing study is completed. USDA stated that both agencies are automating their field offices in anticipation of benefits far beyond those of merely sharing equipment, and a delay in acquisition of computers would sacrifice the greater benefit of automation for the lesser one of sharing.

We do not agree that delaying further acquisition of computer systems until the sharing study is completed would cause either SCS or FmHA to sacrifice benefits due to automation. On the contrary, deferring the acquisition for 4 or 5 months would result in a short delay in achieving these benefits and would offer the opportunity to greatly increase total

benefits to both agencies by adding the savings attributed to sharing. As discussed above, more than half of FmHA's quantifiable savings from automation will not be achieved until its new loan-accounting system is implemented (scheduled for 1989). Officials told us the sharing test would probably be completed by March 1987

10. Department officials, in written comments and in subsequent discussions, agreed with our recommendation that SCS defer ordering computers for offices requiring a one-workstation system until SCS determines whether those offices can use smaller, less expensive computers available under the contract. USDA also believes this deferment should allow exceptions for those offices that can justify the need for AT&T 3B2s prior to completion of the sharing test. USDA believes that, when such a determination is made, SCS should be allowed to purchase one of the larger systems available under the contract. This position is consistent with our recommendation

11. The individual responses of the Office of Information Resources Management and the two agencies are not included here.

---

Requests for copies of GAO reports should be sent to:

U.S. General Accounting Office  
Post Office Box 6015  
Gaithersburg, Maryland 20877

Telephone 202-275-6241

The first five copies of each report are free. Additional copies are \$2.00 each.

There is a 25% discount on orders for 100 or more copies mailed to a single address.

Orders must be prepaid by cash or by check or money order made out to the Superintendent of Documents.

---

United States  
General Accounting Office  
Washington, D.C. 20548

Official Business  
Penalty for Private Use \$300

Address Correction Requested

---

First-Class Mail Postage & Fees Paid GAO Permit No. G100
---